

REMARKS

Applicant intends this response to be a complete response to the Examiner's **17 November 2003** Final Office Action. Applicant has labeled the paragraphs in his response to correspond to the paragraph labeling in the Office Action for the convenience of the Examiner.

Rejections Under 35 U.S.C. §103

5. **Claims 1-14** are rejected under 35 U.S.C.103(a) as being unpatentable over U.S. Patent No. 6,006,225 to Bowman et al. in view of U.S. Patent No. 5,692,107 to Simoudis et al.

The Examiner contends as follows:

Referring to claim 1, Bowman teaches a system and method for analyzing a query and generating related results as claimed. See Figures 1 & 5-9 and the corresponding portions of Bowman's specification for this disclosure. Refer specifically to Figures 7-9 and the corresponding portions of the specification for the disclosure of the claimed invention. In particular, Bowman teaches a method for analyzing a query and generating related results comprising:

- determining [Step 710] a keyword ['term in the query'] associated with the query;
- generating [Steps 720 - 770] at least one term ['the top X related terms'] related to at least one keyword;

- supplying the keywords and terms to a search engine [the corresponding modified query is submitted to the search engine' (Column 14, lines 1-12)]; and

- generating at least one related result to the query ['identify a subset of query result items that include this related term' (Column 14, lines 25-45)].

Bowman does not explicitly disclose that the search engine includes "a data mining routine" to which the keywords and related terms are supplied as claimed. However, Bowman does disclose that the "catalog [database(s)] contains millions of items" and "it is important that the site provide an efficient mechanism for assisting users in locating items." (Column 4, lines 65-67) Furthermore, Bowman discloses the importance of discovering trends in the data and its usage. See column 7, line 60 - column 8, line 14 for this disclosure. These two points provide suggestion for using a data mining routine for locating trends and gathering other statistics about the data within the catalog database(s). Bowman also suggests that, "The search refinement methods of the invention may be implemented, for example, as part of . . . a document retrieval system, or any other type of computer system that provides searching capabilities to a community of users." (Column 4, lines 35-43) This provides direct motivation for combining Bowman's search refinement system with any type of search system, including data mining routines

Simoudis discloses a data mining system and method for extracting patterns and relations from data stored in multiple databases to generate predictive models (trends). See Figures disclosure 1-3 and the corresponding portions of Simoudis' specification for this disclosure. Furthermore, Simoudis' data mining engine accepts query terms (keywords or other terms) as input for the data mining (steps 210-214).

It would have been obvious to one of ordinary skill in the art at the time the invention was made [to] incorporate Simoudis' data mining engine (of Fig 1) into Bowman's Web Server (131) or Query Server (132) and to supply the keywords and related terms generated by Bowman's search refinement system to the data mining engine in order to generate trends

and gather other statistics, from any type of searchable database(s) such as those of Simoudis (114) or Bowman (133), relating to those keywords and related terms. One would have been motivated to do so because of the suggestions provided by Bowman, as described above.

Referring to claim 2, the system and method of Bowman in view of Simoudis as applied to claim 1 above discloses the invention as claimed. See Figure 7 and the corresponding portion of Bowman's specification for this disclosure. Bowman v. Simoudis teaches the method of claim as above, "wherein the determining step comprises polling [Steps 720-730] a database [Query Correlation Table 137] for terms related to at least one keyword" as claimed.

Referring to claim 3, the system and method of Bowman in view of Simoudis as applied to claim 1 above discloses the invention as claimed. See Figures 8 & 9 and the corresponding portions of Bowman's specification for this disclosure. Bowman v. Simoudis teaches the method of claim 1, as above "wherein the query [original or modified query] comprises a plurality of keywords [terms] and wherein the generating step generates terms [related terms (See column 3, lines 23-25 and column 13; lines 55-57)] related to at least one of the plurality of keywords [See Figs. 8-9 e.g.]" as claimed.

Referring to claim 4, the system and method of Bowman in view of Simoudis as applied to claim 1 above discloses the invention as claimed. See Figures 8 & 9 and the corresponding portions of Bowman's specification forth disclosure. Bowman (as modified by Simoudis) search/mining refinement is iterative such that the system continues to generate related terms and related questions [queries] as long as the user continues to select the refined queries. In particular, Bowman v. Simoudis teaches the method of claim 3, as above, further comprising:

- "selecting at least one generated term ['the user clicks on one of these links' (Column 14, line 6)];

- supplying the keywords and the selected terms ['the corresponding modified query is submitted' (Column 14, lines 6-7)] to the data mining routine [See the discussion regarding claim 1 above];

- selecting the at least one question [refined related query 910];

- supplying the selected question to the data mining routine [iterative refinement (Bowman: Column 14, line 32 et seq.) and See claim 1];

- obtaining from the data mining routine at least one related result [920] to the query; and

- generating at least one sub-question [further refined related query 910 (See Bowman Fig. 9 and column 14, line 32 et seq.)] related to the question derived from the related results, where the sub-question is adapted to enhance information retrieval associated with the query" as claimed.

Referring to claim 5, the system and method of Bowman in view of Simoudis as discussed above with regard to claim 1 discloses the invention as claimed. See the discussions regarding claims 1-4 above for the details of this disclosure. Bowman v. Simoudis teaches "a method comprising the steps of:

- constructing a query ['a user submits a query to the web site 130' (Bowman: Column 7, line 14 et seq.)] comprising keywords [terms] and constraints [See Figure 2: prefixes (title, author, subject, etc. - See column 6., lines 59-64) and match types (exact name, start of last name, exact title, etc.)];

- generating (Bowman: Fig. 7) related keywords or related constraints;

- supplying the keywords, the constraints, the related keywords or the related constraints to a data mining routine [See claim 1 above]; and

obtaining "as is" results [Bowman: 920] or information, related results [Bowman: 920 (See the corresponding portion of the specification and the discussion of claim 1 above)] or information and a question related to the query adapted to enhance query results [Bowman: 910] or information" as claimed.

Referring to claim 6, the system and method of Bowman in view of Simoudis as applied to claim 5 above discloses the invention as claimed. See Figures 8 & 9 and the corresponding portions of Bowman's specification for this disclosure. Bowman v. Simoudis teaches the method of claim 5, as above, "further comprising the steps of:

selecting the question ['the user clicks on one of these links' Bowman.: Column 14, line 6)]; and

obtaining "as is" results or information, related results of information and a sub-question related to the question adapted to enhance query results of information [query refinement process (iterative . . . user can repeat indefinitely) 'This process could be repeated using additional related terms . . . ' (Bowman: Column 14, line 32 et seq.)]" as claimed.

Claims 7 and 8 are rejected on the same basis as claim 6. Bowman's query refinement process is iterative, meaning the process can be repeated as many times as desired to refine the query to the user's satisfaction. See column 14, line 32 et seq. of Bowman's specification for this disclosure. Thus, Bowman's method teaches repeating the steps of selecting a refinement [910] (question or sub-question) and obtaining the related results [920] until the user is satisfied with the results and chooses to stop the refinement process.

Referring to claim 9, the system and method of Bowman in view of Simoudis as applied to claim 5 above discloses the invention as claimed. See Figure 2 and the corresponding portion of Bowman's specification, and the discussion regarding claim 5 for the details of the details of this disclosure. Bowman's query constraints include containment constraints (exact name, start of last name, exact title, etc.), grouping constraints (prefixes: title, author, subject, etc.), and/or data constraints (particular item genre out of the entire catalog - books in the example provided) as claimed.

Claim 10 is rejected on the same basis as claim 5, in light of the discussion regarding claim 1. See the discussions of claims 1 and 5 above for the details of this disclosure.

Claim 11 is rejected on the same basis as claim 6, in light of the basis for claim 10 above. See the discussion regarding claims 1, 5 and 6 for the details of this disclosure.

Claims 12 and 13 are rejected on the same basis as claims 7 and 8 respectively, in light of the basis for claim 10 above. See the discussions regarding claims 1, 5 and 6-8 for the details of this disclosure.

Claim 14 is rejected on the same basis as claim 9, in light of the basis for claim 10 above. See the discussions regarding claims 1, 5 and 9 for the details of this disclosure.

Applicant still does not agree that the combination of Bowman and Simoudis renders amended claims 1-14 obvious, now new claims 21-28.

First Bowman is a search engine. A search engine is designed to allow users to navigate the internet and find URLs that may have information related to a query the user poses to the search engine. However, Bowman does not relate to an analysis of the data contained in the URL, a data mining problem. Bowman differs from typical search engines in that Bowman broadens the search by expanding the posed query keywords by adding related keywords where the related keywords

are obtained from a historically based keyword database - Bowman's correlation table. But the terms are still related to finding URLs that relate to the user's query and not to analyzing data in the URLs. Bowman has nothing to do with data mining *per se*.

The claims now included with the application relating to the method include steps that clearly differentiate the present method claims of this invention over Bowman. Bowman does not teach or suggest that the data mining routine controls the construction of database requests designed to extract information from a multi-dimensional database. Second, Bowman does not teach or suggest that the data mining requests generated by the data mining routine are forwarded to a database middleware that converts the data mining requests into appropriate database requests, which depend on the exact database and its type. Third, Bowman does not teach or suggest that the database responses first go to the middleware that converts the database responses into data mining responses (responses that can be understood by the data mining routine). Fourth, Bowman does not teach or suggest that the data mining routine then converts these responses into results and related questions. Nothing in Bowman is geared toward extraction of data from multi-dimensional database, nor with data mining in general.

The combination of Simoudis with Bowman does cure these basic deficiencies present in Bowman. Although Simoudis does relate to data mining, Simoudis does not teach or suggest using the data mining routine and the middleware to construct questions related to the query posed by the user to direct a user down paths that may lead to enhanced information retrieval from the multi-dimensional databases.

Because the combination of Bowman and Simoudis do not teach or suggest the data mining methodology set forth in claims 21-29, Applicant respectfully request withdrawal of this section 103 rejection.

6. **Claims 15-20** stand rejected under 35 U.S.C. 103(a) as being unpatentable over Bowman in view of Simoudis as applied of claim 1 above, and further in view of U.S Patent No. 6,266,668 to Vanderveldt et al. Applicant traverses and request reconsideration based claim amendments, if any, and arguments presented herein.

The Examiner contends as follows:

Referring to claim 15; the system and method of Bowman in view of Simoudis as discussed above with regard to claim 1 discloses the invention as claimed. See Figure 1 and the corresponding portion of Bowman's specification, Figure 1 and the corresponding portion of Simoudis' specification, and the combination of these systems as applied in claim 1 above. In particular, the combination of Bowman and Simoudis teaches "a system comprising:

a remote digital processing unit [Bowman: User Computers 110] including an operating system, communication routines, and a user interface having a query construction routine [Bowman: Figure 2] and a results display routine [Bowman: Figure 9];

an application server [Bowman: Web Server 131 and Query Server 132] including an operating system, communication routines; and a query information retrieval content enhancing sub-system [Bowman: Related Term Selection Process 139 & Simoudis: Data Mining Engine of Figure (See claim 1 above)] having a controller [Bowman: 132 & Simoudis: 106], a library of database interfaces [Simoudis: 112], a library of data mining routines [Simoudis: 104 & 104'], a DB middleware component [Simoudis: 105 & 105'] and a query/results database [Bowman 137], where the subsystem generates related results or information and questions related to the query to enhance information retrieval from a query constructed at the remote digital processing unit [See the discussions regarding claims 1-14 above];

a database server [Simoudis: 106] including an operating system, communication routines, a database [Simoudis: 114] and database services [Simoudis: 112]; and

a network [Bowman: 120] interconnecting the remote digital processing unit, the application server and the database server [Bowman: See Figure 1] as claimed.

Neither Bowman nor Simoudis explicitly discloses an operating system and communication routines in each of the computer systems, as claimed. Furthermore, neither reference teaches "a user profiler" as claimed.

Vanderveldt discloses a data mining system and method similar to that of Simoudis. See Figures 1-3 and the corresponding portions of Vanderveldt's specification for this disclosure. In particular, Vanderveldt teaches the inclusion of operating systems and communications software (routines) in typical computer systems used to "execute the web pages". See column 9, lines 41-53 for this disclosure. Vanderveldt also discloses a user profiler ['neural network trained upon the user profile' (Column 4, lines 64-65)] for extracting information from user profiles to be used in the data mining.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate operating systems and "communications software, such as those of Vanderveldt, into the computer systems of Bowman in view of Simoudis above. One would have been motivated to do so in order to execute the web-based functions of Bowman and Simoudis' methods, as deemed necessary by Vanderveldt's disclosure.

Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include Vanderveldt's user profiler into the data mining subsystem of Bowman in view of Simoudis. One would have been motivated to do so because this would provide more effective results by including each individual user's search tendencies (represented by the profile) into the data mining routine as effectively as possible.

Referring to claim 16, the system and method of Bowman in view of Simoudis and Vanderveldt as applied to claim 15 above discloses the invention as claimed. See Figure 1 and the corresponding portion of Simoudis' specification for this disclosure. Simoudis' data mining library [104 & 104'], as included in the combined system includes "a cluster DMR" (Clustering 104') as claimed.

Referring to claim 17, the system and method of Bowman in view of Simoudis and Vanderveldt as applied to claim 15 above discloses the invention as claimed. See Figures 1 & 4 and the corresponding portions of Simoudis' specification for this disclosure. Simoudis' databases (114) can include any type of database having an associated database

management system (DBMS), including relational databases as disclosed in the example of Figure 4. See column 4, lines 26-34; column 5, lines 59-65; and claim 3 for this disclosure.

Claim 18 is rejected on the same basis as claim 15 in light of the discussions regarding claims 1 and 5 above. See the discussions regarding claims 1, 5 and 15 for the details of this disclosure.

Claims 19 and 20 are rejected on the same basis as claims 16 and 17 respectively, in light of the basis for claim 18 above. See the discussions regarding claims 1, 5 and 15 for the details of this disclosure.

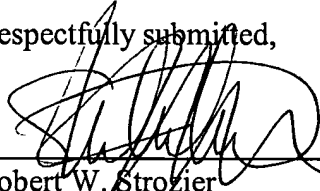
Applicant reasserts its arguments relating to claims 21-28 here. Again the combination of Bowman and Simoudis does not disclose, teach or suggest questions derived from data mining results in the data mining routine mediated by the middleware software so that the user can be lead down a path of enhanced data discovery. The addition of Vanderveldt et al. does nothing to remove the deficiencies of the combination of Bowman and Simoudis. Therefore, Applicant respectfully requests withdrawal of this section 103(a) rejection.

Having fully responded to the Examiner's Non-Final Office Action, Applicant respectfully urges that is application be passed onto allowance.

If it would be of assistance in resolving any issues in this application, the Examiner is kindly invited to contact applicant's attorney Robert W. Strozier at 713.977.7000

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Respectfully submitted,



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